REGISTRATION OF GENETIC STOCKS

Registration of N316-N320 Sorghum Nuclear Male-Sterility Genetic Stocks

N316, N317, N318, N319, and N320 [*Sorghum bicolor* (L.) Moench] genetic stocks (Reg. no. GS-96 to GS-100, PI 612987 to PI 612991) were developed jointly by the USDA-ARS and the Agricultural Research Division, Institute of Agriculture and Natural Resources, University of Nebraska, and were released in July 1999.

N316 (BWheatland *ms1*), N317 (BWheatland *ms2*), N318 (BWheatland *ms3*), N319 (BWheatland *ms7*) and N320 (BWheatland *msal*) were developed by crossing BWheatland to the male sterility sources BMartin (BTx398) *ms1*, BMartin *ms2*, BMartin *ms3*, BMartin *ms7* or BMartin *al*, followed by four backcrosses to BWheatland in the field or greenhouse. Selfed seed of the BC4 was evaluated for release in the field at Lincoln, NE and Mead, NE in 1997 and 1998 and closely resembles BWheatland. N316 (BWheatland *ms1*), N317 (BWheatland *ms2*), and N318 (BWheatland *ms3*) segregated for male sterility at the expected frequency of 3 fertile:1 sterile. N319 (BWheatland *ms7*) segregated at a slightly higher frequency than expected (659 fertile:257 sterile) and N320 (BWheatland *msal*), segregated at a lower frequency than expected (707 fertile:97 sterile). Test crosses were made among the genetic stocks, and they were verified to be nonallelic in the greenhouse in 1999.

These genetic stocks are a uniform source of the male sterility genes *ms1, ms2, ms3, ms7*, and *al* in a common genetic background. They have immediate application for basic research on the effect of the nuclear male sterility genes on sorghum performance, and the performance of breeding systems used for sorghum improvement.

Seed of these genetic stocks will be maintained and distributed by the USDA-ARS, Wheat, Sorghum, and Forage Research Unit, Dep. of Agronomy, Univ. of Nebraska, Lincoln, Nebraska 68583-0937, and will be provided without cost to each applicant on written request. Requests from outside the USA must be accompanied by an import permit. Genetic material of these releases will be deposited in the National Plant Germplasm System where it will be available for research purposes, including development and commercialization of new cultivars. It is requested that appropriate recognition be made if this germplasm contributes to the development of a new breeding line or cultivar.

J.F. Pedersen* and J.J. Toy (1)

References and Notes

1. J.F. Pedersen and J.J. Toy. USDA-ARS. Dep. of Agronomy, Univ. of Nebraska-Lincoln, Lincoln, NE 68583-0937. Joint contribution of the USDA-ARS and the Dep. of Agronomy, Univ. of Nebraska-Lincoln, as Journal Series Paper no. 12886. Registration by CSSA. Accepted 30 Sept. 2000. *Corresponding author (jfp@unlserve.unl.edu).

Published in Crop Sci. 41:607 (2001).

Registration of N321-N340 Sorghum Seed Color/Plant Color Genetic Stocks

N321-N340 [*Sorghum bicolor* (L.) Moench] genetic stocks (Reg. no. GS-101 to GS-120, PI 612992 to PI 613011) were developed jointly by the USDA-ARS and the Agricultural Research Division, Institute of Agriculture and Natural Resources, University of Nebraska, and were released in July 1999.

N321, N322, N323, N324, and N325 have white seed/tan necrotic plant color. N326, N327, N328, N329, N330 have red seed/tan necrotic plant color. N331, N332, N333, N334, N335 have white seed/purple necrotic plant color. N336, N337, N338, N339, N340 have red seed/purple necrotic plant color. The 20 genetic stocks are S8 segregates of a single S3 family from the BC1 generation of the cross (BTx398 *ms3* × BTx630)(*ms3* × BTx630). They were developed with the goal of making seed available to test hypotheses concerning the combined effects of plant color and pericarp color in similar genetic backgrounds. The genetic stocks resemble BTx630, but have normal endosperm. They would be expected to have ≈97% common nuclear genes with the exception of those controlling pericarp color and necrotic plant color. Based on parental genotypes and observed segregation of the lines in crosses, the genotypes for the lines are presumed to be; red seed/tan necrotic plant color (*RRYY ppQQ*), red seed/purple necrotic plant color (*RRYY PPQQ*), white seed/tan necrotic plant color (*RRyy ppQQ*), and white seed/purple necrotic plant color (*RRyy PPQQ*).

These genetic stocks have immediate application for basic research on the effects of plant color and pericarp color on sorghum performance, quality, and biotic and abiotic stress resistance.

Seed of these genetic stocks will be maintained and distributed by the USDA-ARS, Wheat, Sorghum, and Forage Research Unit, Department of Agronomy, University of Nebraska, Lincoln, Nebraska 68583-0937, and will be provided without cost to each applicant on written request. Requests from outside the USA must be accompanied by an import permit. Genetic material of these releases will be deposited in the National Plant Germplasm System where it will be available for research purposes, including development and commercialization of new cultivars. It is requested that appropriate recognition be made if this germplasm contributes to the development of a new breeding line or variety/cultivar.

J.F. Pedersen* and J.J. Toy

References and Notes

1. J.F. Pedersen and J.J. Toy. USDA-ARS, Dep. of Agronomy, Univ. of Nebraska-Lincoln, Lincoln, NE 68583-0937. Joint contribution of the USDA-ARS and the Dep. of Agronomy, Univ. of Nebraska-Lincoln, as Journal Series Paper no. 12887. Registration by CSSA. Accepted 30 Sept. 2000. *Corresponding author (jfp@unlserve.unl.edu).

Published in Crop Sci. 41:607 (2001).

Registration of RG-BFT Photoperiod Insensitive and Rapid-Flowering Autogamous Birdsfoot Trefoil Genetic Stock

RG-BFT (Reg. no. GS-1, PI 613539) rapid reproductive regenerating and photoperiod insensitive birdsfoot trefoil (*Lotus corniculatus* L.) genetic stock was developed and released 25 May 2000 by the United States Department of Agriculture-Agricultural Research Service, in cooperation with the

Oregon, Idaho, and Washington Agricultural Experiment Stations.

In November 1994, 2 g of AG-S4 (1) seed was irradiated with 20 kR of gamma radiation, using a Gammacell 220 with a cobalt-60 source (Atomic Energy of Canada, Ottawa). A random 1200 plant population (AG-S4-IR) was grown from irradiated seed under greenhouse conditions of 16 h light day^{-1} and ≈18°C. After flowering, self-pollination, and pod maturation, two pods per plant were collected from each plant and the seed threshed and cleaned. The harvested seed was designated IR-S_1. A second random 1200 plant population was grown from the IR-S_1 seed and handled as above. The reason for inducing mutations was to attempt to produce non-yellow-colored flower genotypes, but none were observed; however, a single clone (RG-S_1) that flowered more rapidly than all other clones was identified among the second grow-out population of IR-S_1 plants. Seed of RG-S_1 was germinated to produce 28 RG-S_2 plants. RG-BFT is a composite population of seed (RG-S_3) from the 28 plants.

RG-BFT was developed for inheritance studies of birdsfoot trefoil traits using Mendelian instead of population genetics. It is autogamous, does not require hand pollination to produce seed, and a greater number of reproductive cycles can be obtained in the same amount of time as typical flowering birdsfoot trefoil genotypes. RG-BFT flowers after receiving ≈550 accumulated heat units (10°C base temp) when grown under light periods ranging from 13 to 19 hr and using a light intensity averaging 410 mol m^{-2} s^{-1}. When using similar light intensity and a 16 hr light period, AG-S4 and MU-81 (2) flower after 750 and 900 heat units, respectively. RG-BFT flowers after ≈1000 accumulated heat units when grown under 10-hr light period with a light intensity averaging 410 mol m^{-2} s^{-1}. There are no other known birdsfoot trefoil genetic sources that flower under 10-hr photoperiods. Because RG-BFT is photoperiod insensitive, it also is a source of genes to modify photoperiod response in birdsfoot trefoil, and is suitable for basic research involving flowering. Though not grown under field conditions, it is anticipated that RG-BFT, like AG-S4 will not survive the winter in western Oregon.

RG-BFT crosses readily and bidirectionally with other birdsfoot trefoil genotypes, although when used as a female parent, it must be emasculated and has a lower percentage of pod set than when used as a male parent. RG-BFT has leaves that are of similar shape to those of AG-S4, has two to three flowers per umbel, and does not exhibit inbreeding depression. Based on random amplified polymorphic DNA, the band similarity percentages for RG-BFT with other birdsfoot trefoils include MU-81 (50%), MU-81-41 (AG-S4 progenitor) (43%), AG-S4 (8%), and autogamous USDA National Plant Germplasm System PI 260268 from Ethiopia (5%). The somatic chromosome number for RG-BFT is $2n = 4x = 24$.

Limited amounts of RG-BFT seed will be provided upon written request to the corresponding author as supplies permit. Recipients are asked to recognize the source as a matter of open record when this genetic stock contributes to the development of a new germplasm or cultivar or is used for experimental purposes.

J.J. Steiner* and P.R. Beuselinck (3)

References and Notes

1. Steiner, J.J. 1993. Registration of AG-S4 autogamous broad-leaf birdsfoot trefoil germplasm. Crop Sci. 33:1424–1425.
2. Beuselinck, P.R., and R.L. McGraw. 1986. Registration of MU-81 birdsfoot trefoil germplasm. Crop Sci. 26:837–838.
3. Research Agronomist, USDA-ARS, Natl. Forage Seed Prod. Res. Ctr., 3450 SW Campus Way, Corvallis, OR 97331; and Research Geneticist, USDA-ARS, Plant Genetics Res. Unit, Univ. of Missouri, Columbia, MO 65211. Registration by CSSA. Accepted 30 Sept. 2000. *Corresponding author (steinerj@ucs.orst.edu).

Published in Crop Sci. 41:607–608 (2001).